AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Cancelled)

2. (Previously Presented) A method of producing a powder-like thermal insulating material comprising a first component with at least one first phase, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the group formed by zinc, the alkaline earth metals, transition metals, the rare earths and mixtures thereof, said method comprising the steps of:

(a) adding a starting material, in a quantity appropriate to yield the stoichiometry of said insulating material, selected from the group consisting of oxides of Al, hydroxides of Al, oxy-hydrates of Al, and mixtures thereof, to a solvent in which said starting material is insoluble, selected from the group consisting of aqueous solvents, alcoholic solvents and mixtures thereof;

(b) adding salts of M_2O_3 and MeO which are soluble in said solvent, in quantities appropriate to yield the stoichiometry of said insulating material, to said solvent;

(c) dispersing said starting material and said salts to form a suspension;

(d) drying said suspension to form a dry material; and

(e) annealing said dry material.

3. (Previously Presented) A method according to Claim 2, further comprising the step of grinding and dispersing said dry material before said annealing step.

4. (Previously Presented) A method according to Claim 3, wherein said drying step comprises spray drying said material after said grinding and dispersing step but before said annealing step.

5. (Previously Presented) A method according to Claim 2, wherein said solvent is selected from the group consisting of methanol, ethanol, isopropanol, and mixtures thereof.

6. (Previously Presented) A method according to Claim 2, wherein said salts are selected from the group consisting of carbonates, hydrogen carbonates, acetates, and mixtures thereof.

7. (Previously Presented) A method according to Claim 2, wherein said annealing step is performed for from about 0.5 to about 20 hours at a temperature of from about 500° C to about 1800° C.

8. (Previously Presented) A method according to Claim 2, wherein at least one compound selected from the group consisting of ZrO_2, $La_2Zr_2O_7$, $MgZrO_3$, Nd_2O_3, HfO_2, Y_2O_3, Yb_2O_3, Eu_2O_3, $La_2Hf_2O_7$, $MgHfO_3$, oxides of the alkali metals , salts of the alkali metals, and mixtures and alloys thereof, is added to said solvent prior to said drying step.

9. (Currently Amended) A thermal insulating material made according to a ~~the~~ process comprising ~~of Claim 2~~ producing a powder-like thermal insulating material comprising a first component with at least one first phase forming a magnetoplumbite structure, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the group formed by zinc, the alkaline earth metals, transition metals, the rare earth metals and mixtures thereof, said method comprising the steps of:

(a) adding a starting material, in a quantity appropriate to yield the stoichiometry of said insulating material, selected from the group consisting of oxides of Al, hydroxides of Al, oxy-hydrates of Al, and mixtures thereof, to a solvent in which said starting material is insoluble, selected from the group consisting of aqueous solvents, alcoholic solvents and mixtures thereof;

(b) adding salts of M_2O_3 and MeO which are soluble in said solvent, in quantities appropriate to yield the stoichiometry of said insulating material, to said solvent;

(c) dispersing said starting material and said salts to form a suspension;

(d) drying said suspension to form a dry material; and

(e) annealing said dry material.

10. (Previously Presented) A thermal insulating material according to Claim 9, comprising granulates having an average diameter of from about 1 to about 200 µm and a specific surface area of from about 0.1 and about 40 m^2/g.

11. (Currently Amended) A thermal insulating material of Claim 9, wherein Me is selected from the group formed by magnesium, zinc, cobalt, manganese, iron, nickel, chromium, europium, samarium and mixtures thereof.

12. (Previously Presented) A thermal insulating material of Claim 9, wherein the first component contains 1 to 50 mol-% of M_2O_3 and 1 to 50 mol-% MeO.

13. (Previously Presented) A thermal insulating material of Claim 12, wherein the first component contains about 5 to 10 mol-% of M_2O_3 and about 10 to 20 mol-% MeO.

14. (Previously Presented) A thermal insulating material of Claim 9, additionally comprising 0.001 to 20 wt.-% of a second component insoluble in the first component as a crystallisation aid for forming a hexa-aluminate phase.

15. (Previously Presented) A thermal insulating material of Claim 9, wherein said insulating material follows the formula M_2O_3-xMeO-yAl_2O_3, wherein M is selected from the group consisting of lanthanum and neodymium, $0.2 \leq x \leq 3.3$, and $10.0 \leq y \leq 13$.

16. (Previously Presented) A method of producing a powder-like thermal insulating material comprising a first component with at least one first phase, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the group formed by zinc, the alkaline earth metals, transition metals, the rare earths and mixtures thereof, said method comprising the steps of:

(a) mixing starting materials selected from the group consisting of oxides and salts of M, Me and Al, in quantities appropriate to yield the stoichiometry of said insulating material;

(b) granulating said mixture; and

(c) annealing said mixture.

17. (Previously Presented) A method according to Claim 16, wherein said mixing is performed in a drum grinder or a tumbling grinder employing grinding bodies selected from the group consisting of Al_2O_3, ZrO_2, and mixtures thereof.

18. (Previously Presented) A method according to Claim 16, wherein said mixing is performed in a liquid medium and wherein said method additionally comprises a step of drying said mixture prior to said annealing step.

19. (Previously Presented) A method according to Claim 16, wherein said materials are mixed with binders during said mixing step.

20. (Previously Presented) A method according to Claim 16, wherein said annealing step is performed for from about 0.5 to about 20 hours at a temperature of from about 300° C to about 1800° C.

21. (Previously Presented) A method according to Claim 16, wherein at least one compound selected from the group consisting of ZrO_2, $La_2Zr_2O_7$, $MgZrO_3$, Nd_2O_3, HfO_2, Y_2O_3, Yb_2O_3, Eu_2O_3, $La_2Hf_2O_7$, $MgHfO_3$, oxides of the alkali metals , salts of the alkali metals, and mixtures and alloys thereof, is added to said mixture prior to said annealing step.

22. (Currently Amended) A thermal insulating material made according to a ~~the~~ process comprising ~~of Claim 16~~ producing a powder-like thermal insulating material comprising a first component with at least one first phase forming a magnetoplumbite structure, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the

group formed by zinc, the alkaline earth metals, transition metals, the rare earth metals and mixtures thereof, said method comprising the steps of:

(a) mixing starting materials selected from the group consisting of oxides and salts of M, Me and Al, in quantities appropriate to yield the stoichiometry of said insulating material;

(b) granulating said mixture; and

(c) annealing said mixture.

23. (Previously Presented) A thermal insulating material according to Claim 22, comprising granulates having an average diameter of from about 1 to about 200 μm and a specific surface area of from about 0.1 and about 40 m^2/g.

24. (Currently Amended) A thermal insulating material of Claim 22, wherein Me is selected from the group formed by magnesium, zinc, cobalt, manganese, iron, nickel, chromium, europium, samarium and mixtures thereof.

25. (Previously Presented) A thermal insulating material of Claim 22, wherein the first component contains 1 to 50 mol-% of M_2O_3 and 1 to 50 mol-% MeO.

26. (Previously Presented) A thermal insulating material of Claim 25, wherein the first component contains about 5 to 10 mol-% of M_2O_3 and about 10 to 20 mol-% MeO.

27. (Previously Presented) A thermal insulating material of Claim 22, additionally comprising 0.001 to 20 wt.-% of a second component insoluble in the first component as a crystallisation aid for forming a hexa-aluminate phase.

28. (Previously Presented) A thermal insulating material of Claim 22, wherein said insulating material follows the formula M_2O_3-xMeO-yAl_2O_3, wherein M is selected from the group consisting of lanthanum and neodymium, $0.2 \leq x \leq 3.3$, and $10.0 \leq y \leq 13$.

29. (Currently Amended) A method of producing a powder-like thermal insulating material comprising a first component with at least one first phase, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the group formed by zinc, the alkaline earth metals, transition metals, the rare earths and mixtures thereof, <u>wherein Me is not manganese,</u> said method comprising the steps of:

(a) mixing starting materials selected from the group consisting of ~~oxides and~~ salts of M and Me soluble in water and/or alcohol, with an aluminum alcoholate, in quantities appropriate to yield the stoichiometry of said insulating material, to form a solution;

(c) precipitating and separating solid materials from said solution;

(d) drying said solid materials to form a dry material; and

(e) annealing said dry material.

30. (Previously Presented) A method according to Claim 29, wherein said precipitating step comprises the addition of water to said solution.

31. (Previously Presented) A method according to Claim 29, wherein said precipitating step comprises adjusting the pH of said solution.

32. (Previously Presented) A method according to Claim 29, wherein said annealing step is performed at a temperature of from about 500° C to about 1700° C.

33. (Cancelled).

34. (Currently Amended) A method according to Claim 29 ~~33~~, wherein said starting materials are alcoholates ~~are~~ of the formula $-OC_nH_{2n+1}$, where $1 \leq n \leq 5$.

35. (Previously Presented) A method according to Claim 34, wherein said alcoholates are selected from the group consisting of methoxy, ethoxy, isopropoxy, propoxy, butoxy, and isobutoxy alcoholates, and mixtures thereof.

36. (Previously Presented) A method according to Claim 29, wherein said starting materials are water soluble salts, selected from the group consisting of acetates, citrates, carbonates, hydrogen carbonates, formates, hydroxides, and nitrates.

37. (Previously Presented) A process according to Claim 29, additionally comprising the step of mixing an organic binding agent with said solid materials after said precipitating and separating step and before said drying step.

38. (Previously Presented) A process according to Claim 29, wherein said drying step comprises spray drying.

39. (Previously Presented) A method according to Claim 29, wherein at least one compound selected from the group consisting of ZrO_2, $La_2Zr_2O_7$, $MgZrO_3$, Nd_2O_3, HfO_2, Y_2O_3, Yb_2O_3, Eu_2O_3, $La_2Hf_2O_7$, $MgHfO_3$, oxides of the alkali metals, salts of the alkali metals, and mixtures and alloys thereof, is added to said solvent prior to said precipitating and separating step.

40. (Previously Presented) A thermal insulating material made according to the process of Claim 29.

41. (Cancelled).

42. (Currently Amended) A thermal insulating material of Claim 40, wherein Me is selected from the group formed by magnesium, zinc, cobalt, ~~manganese~~ iron, nickel, chromium, europium, samarium and mixtures thereof.

43. (Previously Presented) A thermal insulating material of Claim 40, wherein the first component contains 1 to 50 mol-% of M_2O_3 and 1 to 50 mol-% MeO.

44. (Previously Presented) A thermal insulating material of Claim 43, wherein the first component contains about 5 to 10 mol-% of M_2O_3 and about 10 to 20 mol-% MeO.

45. (Previously Presented) A thermal insulating material of Claim 40, additionally comprising 0.001 to 20 wt.-% of a second component insoluble in the first component as a crystallisation aid for forming a hexa-aluminate phase.

46. (Previously Presented) A thermal insulating material of Claim 40, wherein said insulating material follows the formula M_2O_3-xMeO-yAl_2O_3, wherein M is selected from the group consisting of lanthanum and neodymium, $0.2 \leq x \leq 3.3$, and $10.0 \leq y \leq 13$.

47. (Previously Presented) A method of making a thermal insulating part, comprising

(a) forming said part from a thermal insulating material comprising a first component with at least one first phase, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the group formed by zinc, the alkaline earth metals, transition metals, the rare earths and mixtures thereof; and

(b) sintering said part.

48. (Previously Presented) A method according to Claim 47, wherein said forming step comprises axial cold pressing, isostatic cold pressing, slip casting, extruding, or foil casting.

49. (Previously Presented) A method of making a thermal insulating part, comprising

(a) forming said part from a thermal insulating material comprising a first component with at least one first phase, which stoichiometrically contains (a) 1 to 80 mol-% of M_2O_3, (b) 0.5 to 80 mol-% MeO and (c) the remainder comprising Al_2O_3, wherein M is selected from the group formed by lanthanum, neodymium and mixtures thereof, and Me is selected from the group formed by zinc, the alkaline earth metals, transition metals, the rare earths and mixtures thereof, wherein said forming comprises producing a ceramic foam; and

(b) sintering said part.

50. (Previously Presented) A method according to Claim 49, wherein said ceramic foam is made by a process comprising producing a slip of said insulating material in a solvent, filling a polymer foam with said slip; driving off said solvent; and heating said filled foam.

51. (Previously Presented) A method according to Claim 50, wherein said heating is conducted at a temperature of from about 900° C to about 1100° C.

52. (Previously Presented) A method according to Claim 49, wherein said ceramic foam is made by a process comprising forming a suspension of said insulating material with a low viscosity polymer, foaming said polymer, and heating said foamed suspension.

53. (Previously Presented) A method according to Claim 52, wherein said heating is conducted at a temperature of from about 900° C to about 1100° C.

54. (Previously Presented) A method according to Claim 52, wherein said low viscosity polymer is a polyurethane and said foaming is performed using a foaming gas/hardening agent.

55. (Previously Presented) A thermal insulating part made by a process according to Claim 47.

56. (Previously Presented) A thermal insulating part of Claim 55, wherein Me is selected from the group formed by magnesium, zinc, cobalt, manganese iron, nickel, chromium, europium, samarium and mixtures thereof.

57. (Previously Presented) A thermal insulating part of Claim 55, wherein the first component contains 1 to 50 mol-% of M_2O_3 and 1 to 50 mol-% MeO.

58. (Previously Presented) A thermal insulating part of Claim 57, wherein the first component contains about 5 to 10 mol-% of M_2O_3 and about 10 to 20 mol-% MeO.

59. (Previously Presented) A thermal insulating part of Claim 55, additionally comprising 0.001 to 20 wt.-% of a second component insoluble in the first component as a crystallisation aid for forming a hexa-aluminate phase.

60. (Previously Presented) A thermal insulating part of Claim 55, wherein said insulating part follows the formula M_2O_3-xMeO-yAl_2O_3, wherein M is selected from the group consisting of lanthanum and neodymium, $0.2 \leq x \leq 3.3$, and $10.0 \leq y \leq 13$.

61. – 80. (Cancelled).